PANORAMA dtv
THE VIDEO DIVISION OF WOHLER TECHNOLOGIES

MON2-3W/HR

(Document P/N **821632** Rev-**B**)

3U Dual Display HD/SDI Digital
High-Resolution LCD Video Monitor

with Two 7" Wide 16:9 High-Resolution
LCD Video Displays, Two SDI or HD-SDI
Inputs and Buffered/Equalized Outputs (on BNC),
and SDI Lock Indication LEDs

User Manual

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Important Safety Instructions

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat source such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched, particularly at plugs convenience receptacles and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.
12) Use only with the cart stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15) Do not expose this apparatus to rain or moisture.
16) The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

CAUTION!

In products featuring an audio amplifier and speakers, the surface at the side of the unit, where the audio amplifier heat sink is internally attached, may get very hot after extended operation. When operating the unit excercise caution when touching this surface and ensure that external materials which may be adversely affected by heat are not in contact with it. There is a Hot Surface label (see diagram) attached to the aforementioned surface of the product.

Introduction

Congratulations on your selection of a PANORAMAdtv product. We are confident it represents the best performance and value available, and we guarantee your satisfaction with it.

If you have questions or comments you may contact us at:

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Section 1

General Features and Specifications

Warranty

Description

Features

Applications

General Specifications

LCD Display Optical Characteristics

LCD Display Video Raster Format Parameters

Installation

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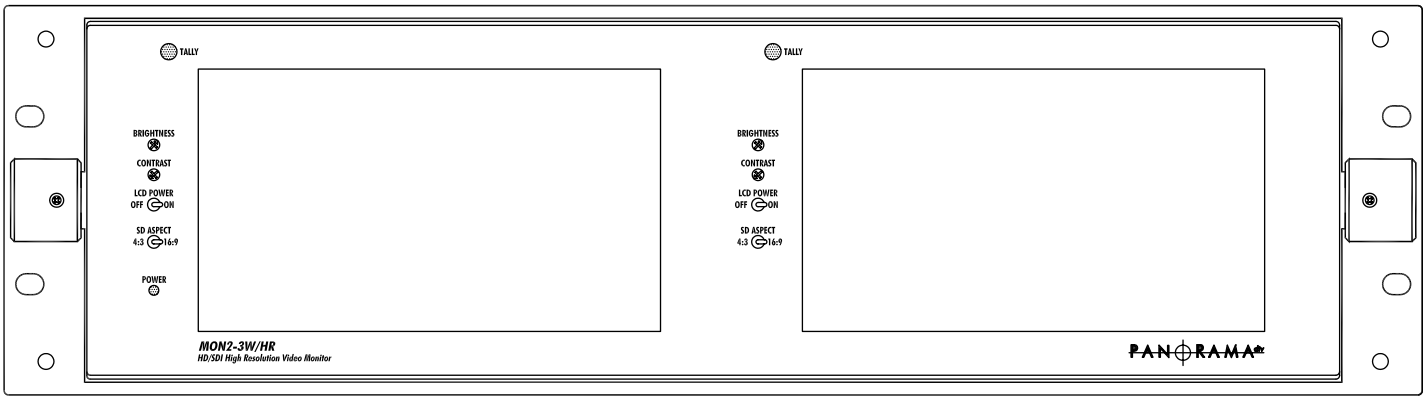
MON2-3W/HR

3U Dual Display HD/SDI Digital High-Resolution Video Monitor



MON2-3W/HR Front Panel

Description

The **MON2-3W/HR** is a dual display high-resolution video monitor capable of monitoring either Standard Definition (SD) or High Definition (HD) SDI signals using an all digital signal processing (DSP) path. It is mounted in a 3RU, full-rack width chassis designed to install into a industry standard 19" rack.

The **MON2-3W/HR** features two high-resolution 7" active matrix TFT back-lit LCD displays with a native 16:9 aspect ratio. A front panel switch allows selection between full 16:9 and pillar boxed 4:3 aspect ratios for SD-SDI signals. Each LCD can display standard or high definition NTSC or PAL digital video signals and automatically detects and accomodates these formats for display. The LCD display features recessed front panel trim pot controls for contrast and brightness and a power indication LED. Displays can be individually turned on and off using front panel toggle switches.

The rear panel features two SDI inputs and two SDI outputs (buffered and equalized) on BNC connectors and a green LED indicating the lock status of the attached SDI source signal. A DB-25 connector on the rear panel can be interfaced to most tally systems and there are two built-in tri-color (red/green/amber) LEDs on the front panel for tally indication.

Features

- Dual 7” LCD high resolution 16:9 aspect ratio color video diaplays
- Two HD-SDI or SD-SDI (auto-sensing) inputs with two buffered and equalized HD/SD-SDI outputs
- Two SDI "lock" indication LEDs on rear panel
- Selectable native 16:9 or pillar boxed 4:3 aspect ratio of SD-SDI signals for each display
- Separate ON/OFF switch for each display
- Wide viewing angle
- Fits in a 3U standard 19" rack space
- Recessed front panel trim pot controls for brightness and contrast
- Minimal power dissipation for a low operating temperature
- Low power consumption
- Power indication LED
- Internal universal AC mains power supply
- Two tri-color Tally indicator LEDS and DB-25 connector with universal interface

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Applications

The **MON2-3W/HR** is ideal for video monitoring for mobile trucks, news and transmission control rooms, duplication and post production applications. Built and rigorously tested in the USA, the **MON2-3W/HR** is backed by a strong warranty and a "Satisfaction Guaranteed" return policy.

General Specifications

Display Size (diagonal):	7.0" (17.8 cm)
Display Type:	High-resolution TFT LCD , Transmissive
Video Formats:	NTSC/PAL autosensing
Signal Input Type:	75 ohm BNC (SMPTE 259M, SMPTE 292M autodetect)
Display Image Controls:	Brightness and contrast
Aspect Ratio:	**HD-SDI** = 16:9, **SD-SDI** = 16:9 or 4:3
Active Area (HxV):	155.00 x 87.12 (mm)
Resolution (dots x lines):	854 Pixels X 3 (RGB Dots) X 480 Lines (1.2M "Megadots")
Dot Pitch (HxV):	0.0605 x 0.1815 (mm)
Pixel response Time:	7 ms rising (typ.); 18 ms falling (typ.)
Color Configuration:	RGB Stripe
Color Numbers:	262,000
Viewing Angle:	top=50°, bottom=60°, left=65°, right=65°
Contrast Ratio:	450 (typ.)
Brightness:	400 (typ.) NITs (cd/m2)
LCD Lamp Life:	15,000 hours (avg.). to specified reduction
Power Consumption:	20W
Power Supply:	100 to 240VAC, 47 to 63Hz, universal input, internal, CE & UL approved
Chassis Type:	3U, 19" rack mounting (EIA-310D)
Dimensions (HxWxD):	5.25 x 19 x 6.75" (133.3 x 482.6 x 171.4 mm)
Weight:	11.3 lbs (5.1 kg)

Units are designed to meet, at time of manufacture, all currently applicable product safety and EMC requirements, such as those of CE. Features and specifications subject to improvement without notice.

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*

LCD Display Optical Characteristics

Position		Symbol	Condition	MIN	TYP	MAX	Unit
Viewing Angles		⊕ Right	CR = 10	55	65	–	Degree
		⊕ Left		55	65	–	
		⊕ Up		40	50	–	
		⊕ Down		50	60	–	
		⊕ Right	CR = 5	–	70	–	
		⊕ Left		–	70	–	
		⊕ Up		–	70	–	
		⊕ Down		–	70	–	
Contrast Ratio		CR	⊕ = 0°	350	450	–	
Response Time	Rising	Tr		–	7	10	ms
	Falling	Tf		–	18	25	
Luminance (Min.)		L		350	400	–	cd//m^2
Chromaticity	White	x_w		0.28	0.31	0.34	
		y_w		0.30	0.33	0.36	

LCD Display Video Raster Format Parameters

Format	Scan Format Standards	Frame Rate	Lines	Active Lines	Samples	Active Samples
SDTV, 54	RP 174	60i	525	507/487*	3432	2880
SDTV, 36	SMPTE 267	60i	525	507/487*	2288	1920
SDTV, 27	SMPTE 125	60i	525	507/487*	1716	1440
SDTV, 54	ITU-R BT 601.5	50i	625	577	3456	2880
SDTV, 36	ITU-R BT 601.5	50i	625	577	2304	1920
SDTV, 27	ITU-R BT 601.5	50i	625	577	1728	1440
HDTV, 74.25	SMPTE 260	30i	1125	1035	2200	1920
HDTV, 74.25	SMPTE 274	30i	1125	1080	2200	1920
HDTV, 74.25	SMPTE 274	30p	1125	1080	2200	1920
HDTV, 74.25	SMPTE 274	25i	1125	1080	2640	1920
HDTV, 74.25	SMPTE 274	25p	1125	1080	2640	1920
HDTV, 74.25	SMPTE 295	25i	1250	1080	2376	1920
HDTV, 74.25	SMPTE 274	24p	1125	1080	2750	1920
HDTV, 74.25	SMPTE 296 (1, 2)	60p	750	720	1650	1280

Installation

Unpacking

Unpack the **MON2-3W/HR** unit from the shipping container and inspect all articles for shipping damage. If you find any damage, notify the shipping carrier immediately for claims adjustments. Compare the shipping box contents to the packing slip. Contact our PANORAMAdtv sales representative if there are any unexplained shortages.

Cooling and Airflow

No special physical mounting considerations are necessary regarding unit heat dissipation except under adverse conditions. Provided the ambient temperature inside the mounting enclosure does not exceed 40 degrees Celsius (104 degrees Fahrenheit), adjacent devices can be rack mounted (or stacked) in proximity to the unit. If the above temperature is exceeded, allow a 1RU (1.75”/44.45mm) space above and below the unit for air circulation.

Rack Mounting

The **MON2-3W/HR** unit half-rack mounts in a standard 19" rack.

General Installation Recommendations

Recommended Cable Type: Belden 1694A (or equivalent). Note that the monitors HD receiver is optimized for a maximum cable length of 140 meters (460 ft) for **HD-SDI** (1.485 GB/s) inputs and maximum cable length of 350m (1149 ft) for **SD-SDI** (270 MB/s) inputs.

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Section 2

Operation

Front Panel Features

Rear Panel Features

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Front Panel Features

Please refer to **Figure-2a** on the facing page to familiarize yourself with the front panel features of the **MON2-3W/HR** unit. The following sections describe these functions and are referenced, by number, to **Figure-2a**.

1 Video Display On/Off Switch

This switch is used to individually turn On/Off each video display.

2 Aspect Ratio Select Switch

This switch selects either a **16:9** or **4:3** aspect ratio for **SD-SDI** video signals in the associated display. The aspect ratio for **HD-SDI** video signals is always **16:9** regardless of the setting of this switch. Note that **SD-SDI** signals may be forced to always display at an **4:3** aspect ratio with **SD-SDI** input signals by setting the rear panel **Option Switch** to position **9** (**Item B**, page **10**).

3 Power Indication LED

This LED glows GREEN to indicate the units **Power Connector** (**Item A**, page **10**) is connected to mains power and an operation voltage is present.

4 LCD Video Display (1-2)

View the input video source here. Screen image **brightness** and **contrast** are adjustable by two manual controls (**Item 5**). Supported **PAL**/**NTSC, HD,** and **SD** formats are automatically detected and accomodated. See page **5** for specifications and pages **6** for more technical information about these high-resolution LCD displays.

5 LCD Video Display Controls (Brightness/Contrast) - (1-2)

The LCD video displays are adjustable using these two image controls:

- **BRIGHTNESS** - adjust for desired screen brightness.
- **CONTRAST -** adjust for desired image scene, dark-to-bright contrast.

6 Tally Indication LED (1-2)

These tri-color LEDs can glow RED, GREEN, or AMBER to indicate tally status associated with the displayed video signal. Refer to pages **14** and **15** for tally connection details.

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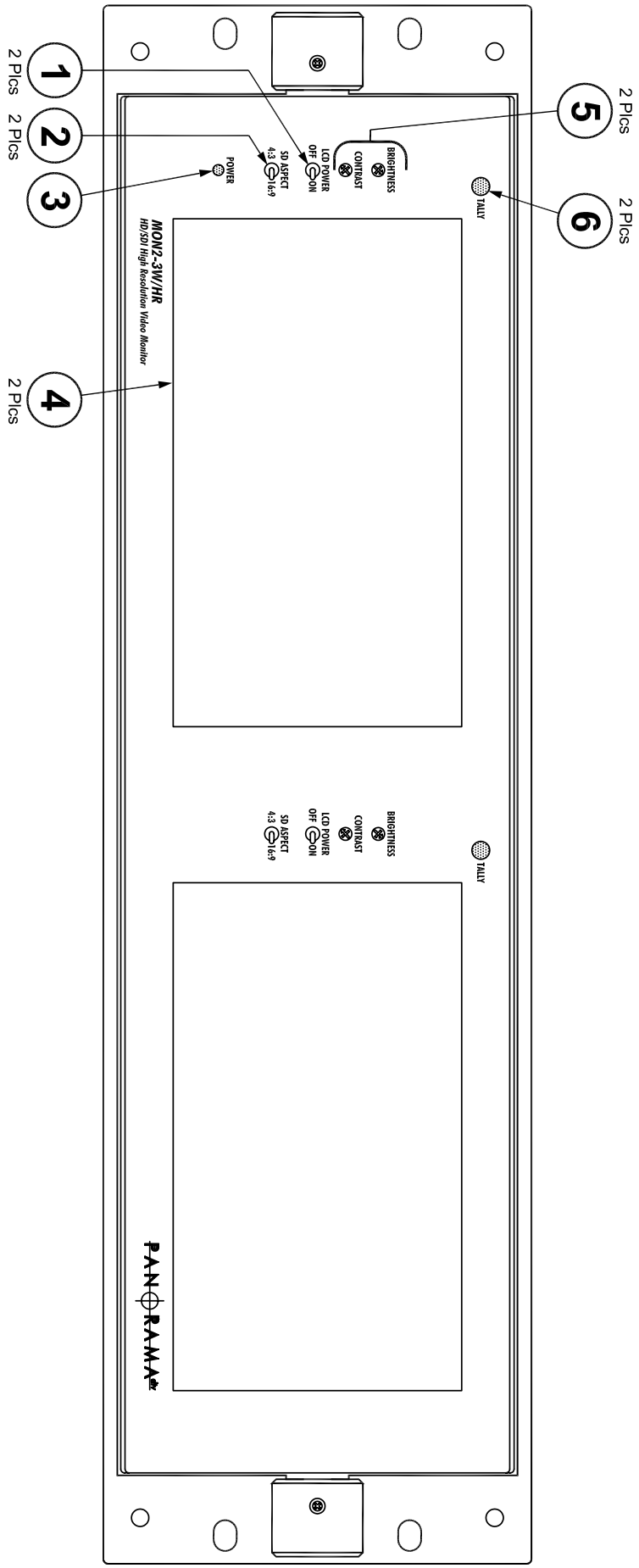

Figure-2a: Front Panel Features

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Rear Panel Features

Please refer to **Figure-2b** on the facing page to familiarize yourself with the rear panel features of the **MON2-3W/HR** unit. The following sections describe these features and are referenced, by letter, to **Figure-2b**.

A Power Connector

Attach a standard IEC-320 power cord between this connector and mains power. The front panel **Power LED** (**Item 2**, page **8**) will glow GREEN to indicate that an operating voltage is present.

B Option Switch (1-2)

This 10-position BCD switch is used to select test and fill options. Fill options display a solid field of 100% of selected color in the *absence* of an incoming video signal. Settings are shown in the table below:

OPTION BCD Rotary Switch - 10-Position	
Position	**Function**
0	**Test** (see Note **1**)
1	**Black** Fill
2	**Red** Fill
3	**Green** Fill
4	**Blue** Fill
5	**Int. Test** (see Note **2**)
6	Reserved
7	Reserved
8	Reserved
9	**SD Auto 4:3** (See Note **3**)

NOTES:

1) For normal operation, the BCD switch must be set to positions **1**, **2**, **3**, or **4**.

2) If the unit is powered while the switch is set to position **5**, a cyan fill will be displayed on the screen. Upon application and removal of an SDI or HD-SDI signal, internally generated color bars will be displayed on the associated screen.

3) If set to this mode, application of an **SD-SDI** signal will force the screen aspect ratio to **4:3**; **HD-SDI** signals will remain at **16:9** aspect ratio. This setting will override the front panel **Aspect Ratio Switch** (Item **2**, page **10**).

C SDI Output Connector (1-2)

This connector outputs a buffered and equalized copy of the **SD-SDI** or **HD-SDI** signal entering the associated **SDI Input Connector** (**Item D**).

D SDI Input Connector (1-2)

These female BNC connector inputs accept either **SD-SDI** or **HD-SDI** inputs of various **SMPTE** standards (see **LCD Display Video Raster Format Parameters** table on page **6**) and are terminated at **75Ω**.

E SDI Lock Indication LED (1-2)

These LEDs glow GREEN to indicate that the **SDI** source signal connected to the associated **SDI** input is "locked".

F Tally Control Connector

This 25-pin sub-miniature female “D” connector (DB-25) allows you to tally the individual monitor Tally Indication LEDs (**Item 4**, page **8**) on the front panel. Connection details are described on pages **14** and **15**.

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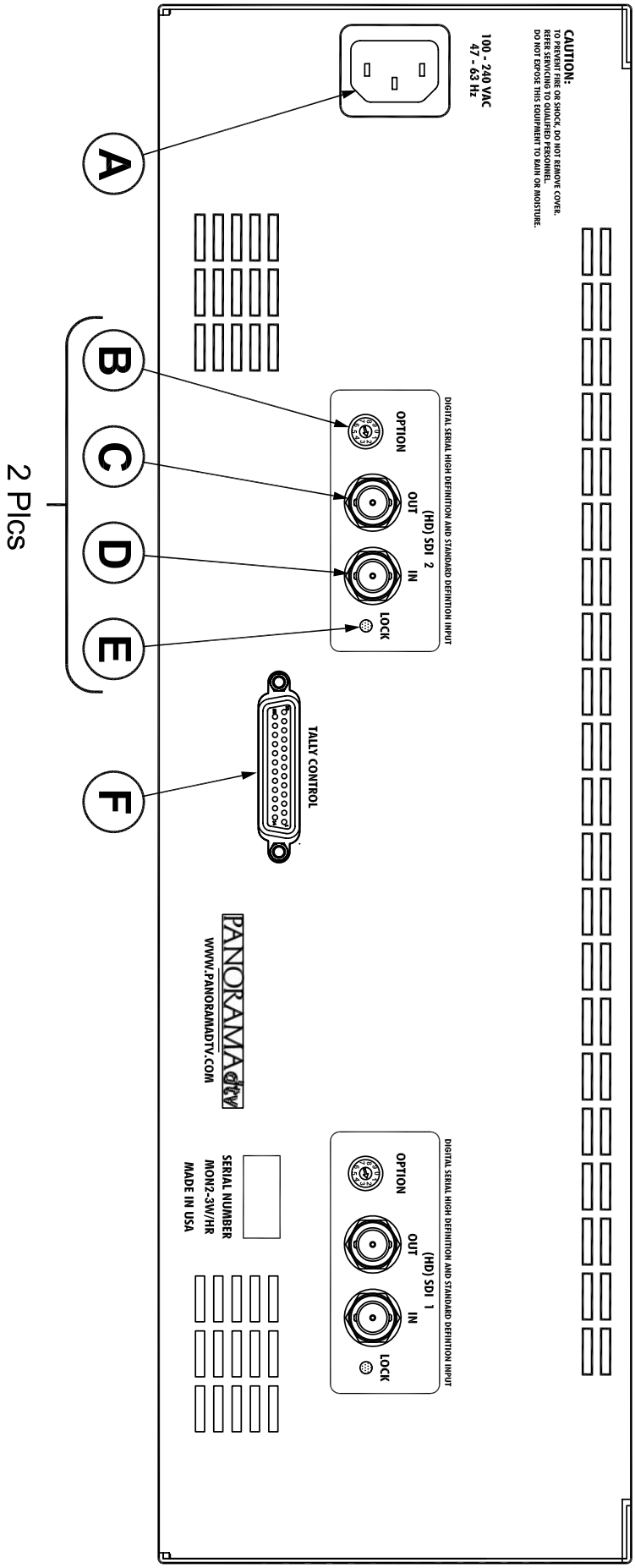

Figure-2b: Rear Panel Features

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Section 3

Technical Information

Tally Control Connections

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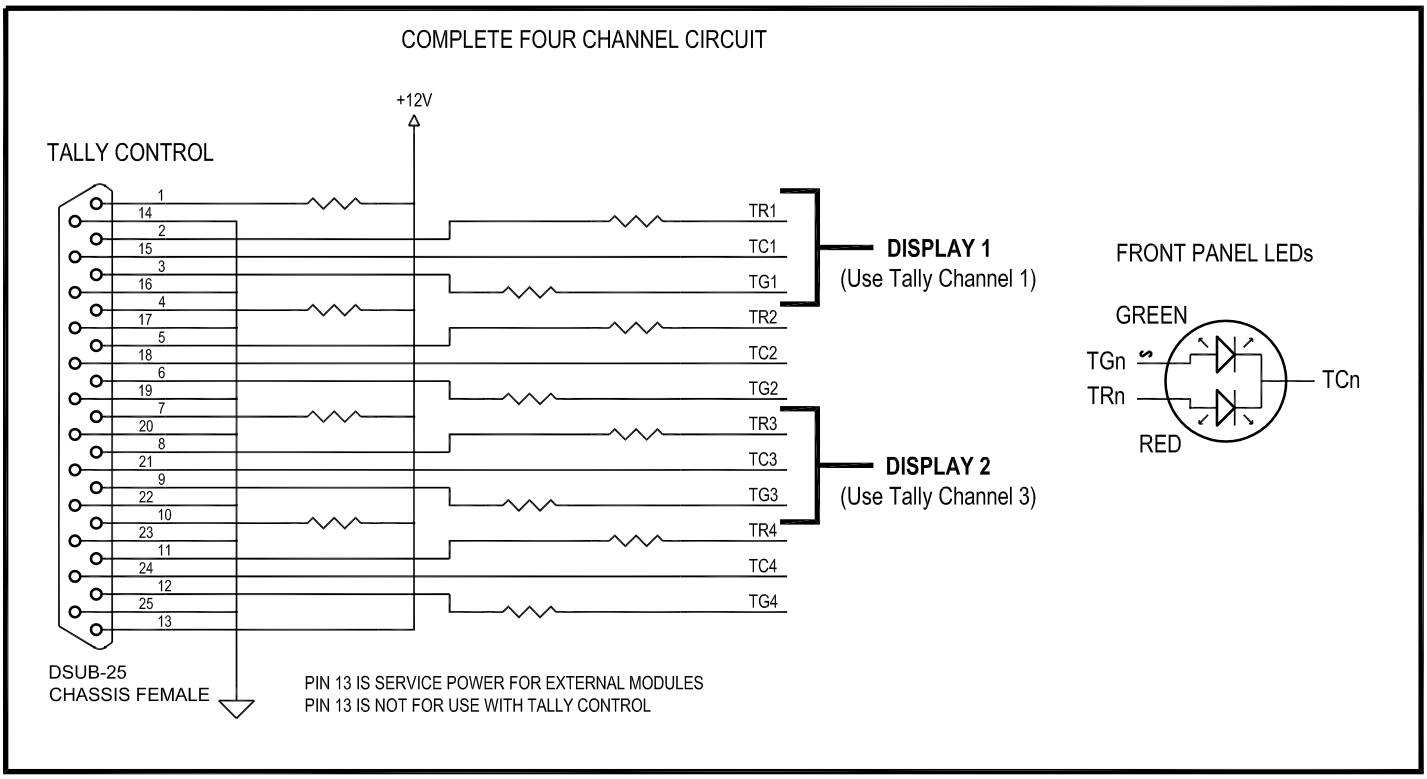
Tally Control Connections

A front panel dual-color **Tally Indication LED** is associated with each LCD display module. Interface is provided to the LEDs via the **Tally Control Connector** located on the chassis rear panel. The **Tally Indicator LED**s are capable of displaying three colors; RED, GREEN, and AMBER. Illuminating the RED or GREEN LEDs separately will result in that tally color. Illuminate the RED and GREEN LEDs simultaneously to achieve a AMBER tally indication in the LED. Note that tally channel **1** (pins 2, 15, 3) is used to drive the **Tally Display 1** LEDs, while tally channel **3** (pins 8, 21, 9) is used to drive the **Tally Display 2** LEDs. See the diagram below for tally connector pinouts and LED wiring.

Three examples of tally connection configurations are shown on the facing page. You can operate the **Tally Indication LED**s by numerous methods. The three tutorial examples showing **dry closure**, **positive true logic drive**, and **open collector** activation are illustrated to show basic operation. The LEDs interface with TTL levels. You can design illumination circuits as shown, by using TTL buffers, or by using transistors as switches.



Tally Connector Pin Functions

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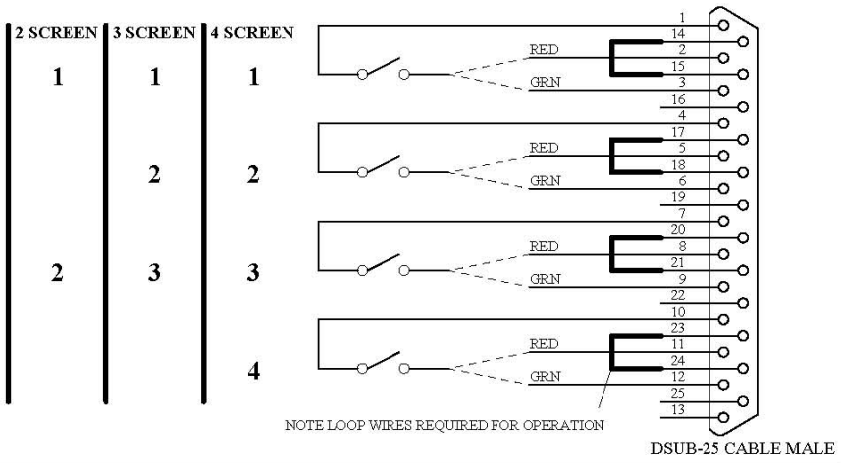
Tally Control Connections

DRY CLOSURE

USING INTERNAL POWER SOURCE

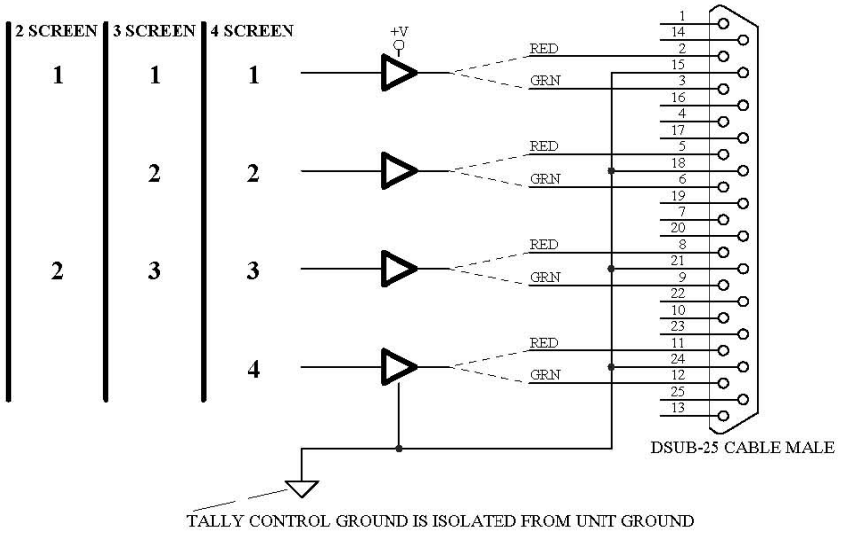
BOTH LEDS ON IS OK, BOTH = YELLOW



POSITIVE TRUE LOGIC DRIVE

USING EXTERNAL POWER 5 - 12VDC

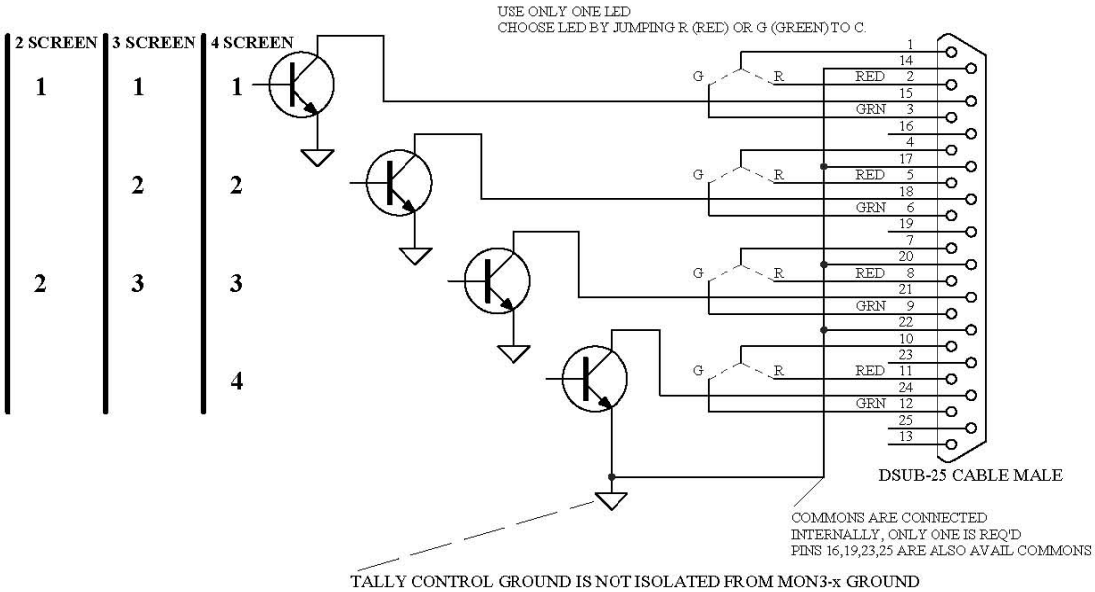
BOTH LEDS ON IS OK, BOTH = YELLOW



OPEN COLLECTOR

TRANSISTOR ON =LED ON

ONE LED ONLY



Tally Connection Configuration Examples

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